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DERMATOLOGIC THERAPY WILEY

LETTER

Pemphigus vulgaris following second dose of mRNA-(Pfizer-BioNTech) COVID-19 vaccine

Dear Editor,

Pemphigus vulgaris (PV) is an autoimmune, blistering dermatosis caused by autoantibodies to desmoglein (Dsg) 1 and (Dsg) 3 targeting keratinocyte desmosomes. The etiology of the disease remains unknown. There are many inciting factors for PV development, including infections, medications, ultra-violets, radiations, trauma, burns, and underlying neoplasms. A limited number of patients developed PV following vaccination.[1–3]

Only a few cases of PV following the COVID-19 vaccine were reported since the beginning of the pandemic. We report a case of PV occurring 1 week after the second dose of mRNA-Pfizer-BioNTech COVID-19 vaccine.

1 | CASE REPORT

A consent patient of 72 years old, with no particular medical history and no medication intake, developed a blistering eruption 1 week after the second dose of the mRNA BNT162b2 vaccine (Comirnaty®/Pfizer/BioNTech). The lesions started on the oral mucosa causing pain and discomfort when eating and spread 2 weeks later to the head, neck, trunk, and all extremities. On examination, the patient was alert, conscious, and apyretic. On dermatologic examination, he had post-bullous erosions as well as intact flaccid blisters (Figure 1A) and mucosal erosions (Figure 1B). Nikolsky's sign was positive. Blood exams, including routine clinical chemistry, neoplastic markers, and protein electrophoresis, were normal. Moreover, a thoraco-abdomino-pelvic scanner was performed to rule out associated malignancies. Histopathology from a bullous lesion demonstrated suprabasal blister, with acantholysis in the lower epidermal layers along with occasional lymphocytes (Figure 2). Direct resolution immunofluorescence from perilesional skin showed intercellular deposition of IgG antibodies and C3realizing honeycomb-like pattern (Figure 3) confirming the diagnosis of PV. Indirect immunofluorescence, using ELISA, revealed a high level of anti-Dsg-3 antibody (2600 U/ml; normal <20 U/ml), as well as anti-Dsg-1 antibody titer (1280 U/ml; normal <20 U/ml). The patient has been treated with prednisone 80 mg/day (1 mg/kg/day) and azathioprine 150 mg/day. Complete resolution of the bullae was achieved after only 3 weeks of treatment.

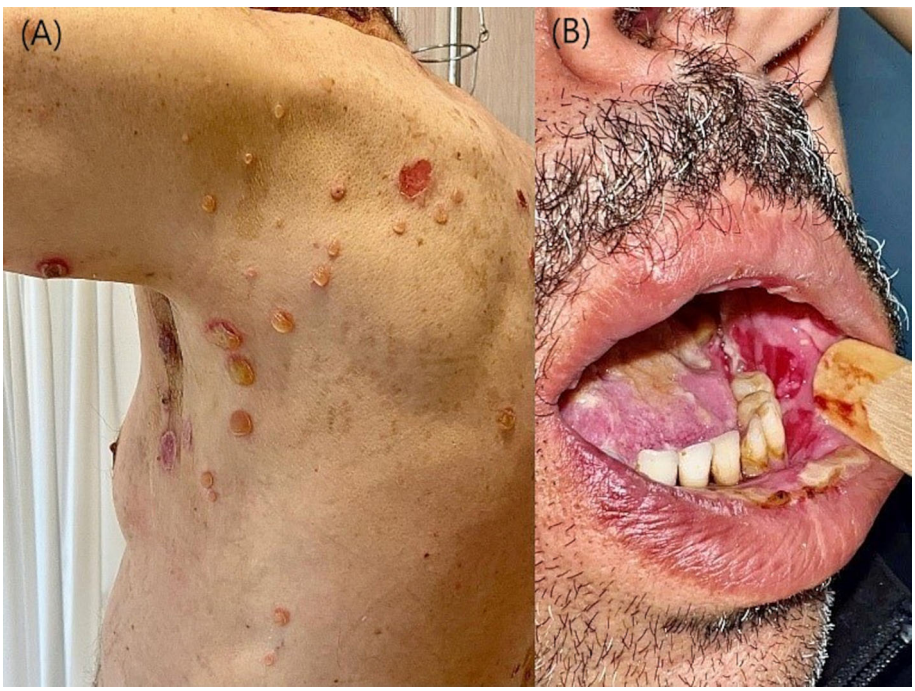

FIGURE 1 (A) Flaccid blisters on healthy skin with post-bullous erosions. (B) Post-bullous erosions of the oral mucosa

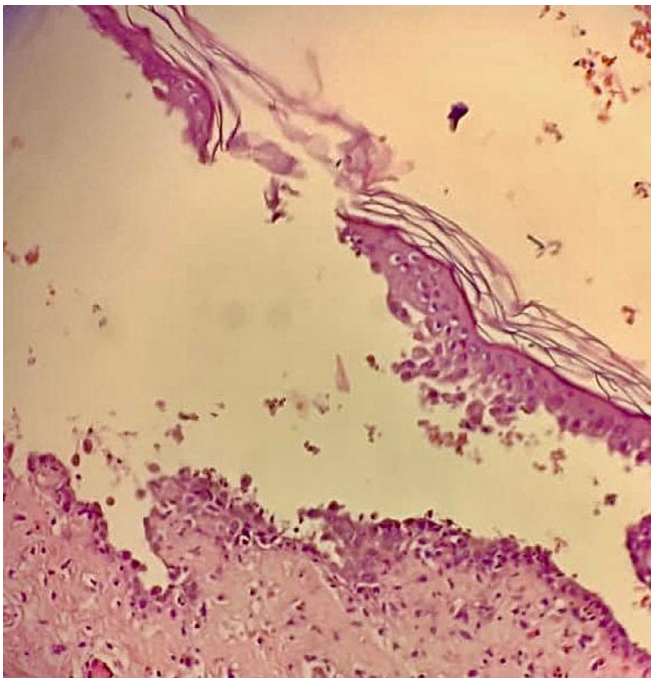

FIGURE 2 Histology of lesional skin showing epidermal coating with a blister and acantholytic cells x40

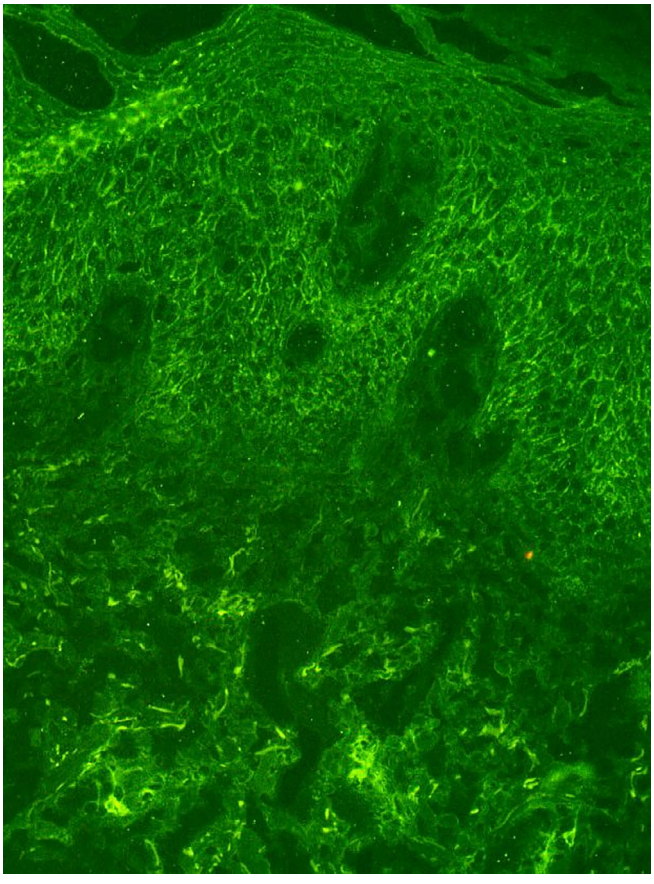

FIGURE 3 Direct immunofluorescence from perilesional skin presenting IgG deposits along the inter keratinocyte junction, resulting in a mesh-like appearance x40

2 | DISCUSSION

The occurrence of autoimmune diseases, as well after infectious episodes or after the administration of vaccines, is a known event. Since the introduction of Sars-COV-2 vaccines, several cases of new-onset autoimmune bullous dermatoses have been published.[4] According to a review of the literature concerning autoimmune bullous dermatosis induced by COVID-19 vaccines, published by Calabria et al, the most common autoimmune bullous dermatosis was bullous pemphigoid.[4] Regarding PV, only six cases were reported in the literature.[4] According to these cases, PV appeared after the first, second, or third dose of the vaccine with a delay ranging from 5 to 30 days and the most incriminated vaccine was Pfizer.[4] The exact mechanism by which this vaccine can trigger PV is not well understood. It seems to be that, in a patient with a genetic predisposition, the inflammatory response induced by the vaccine as well as the antigenic similarity between the vaccine components and some skin components may explain the link between these two phenomena. The Pfizer-BioNTech BNT162b2 vaccine is an RNA vaccine, which codes for the S protein which facilitates recognition and virus entry within human cells with translation inside the cytoplasm. This translation leads to T cell and B cell activation and thus to antibody production and TH1 polarization of the helper response.[5] The role of the TH1 response has also been described in the pathophysiology of PV.[6] A recent study has demonstrated the presence of antigenic similarities between certain components of the virus, notably the spike protein, and certain human tissues. The authors of this study suggest the possibility of a cross-reaction between antibodies directed against the spike protein and the TRG 2 and TRG 3 proteins present in the skin.[7] In the case of our patient, although coincidence cannot be formally excluded, we believe that there is most likely a close link between the vaccination and the occurrence of PV given the temporal relationship between the two events, the absence of any associated neoplasia, and medication's intake. Furthermore, we explain its occurrence after the second dose by a prior stimulation of the immune system during the first dose, which led to a faster response of the immune system.

AUTHOR CONTRIBUTIONS

Fatima-zahra Agharbi: main author of the article. **Ghita Basri**: Review and correction of the language. **Soumia Chiheb**: Reading and correction of the final version.

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We certify that we have received the informed and written consent of the patient for the use of his clinical, biological, histological, and iconographic data.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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